Dourine

Covering Disease, Morbo Coitale Maligno, Slapsiekte, el Dourin, Mal de Coit, Beschalseuche, Sluchnaya Bolyezn

Importance

Dourine is a serious, often chronic, venereal disease of horses in Asia, Africa, South America, and southeastern Europe. This infection can result in neurologic signs and emaciation, and the mortality rates are high. No vaccine is available, and treatment with drugs may result in inapparent carriers.

Etiology

Dourine is caused by infection with the protozoal parasite *Trypanosoma equiperdum* (subgenus Trypanozoon, Salivarian section). This parasite can periodically replace its major surface glycoprotein antigen and evade immune responses. Strains vary in their pathogenicity.

Species affected

Dourine mainly affects horses, donkeys, and mules. The disease is generally more severe in improved breeds of horses, and milder in native ponies, donkeys, and mules. Various laboratory animals, including rats, can also be infected. Zebras have tested positive by serology, but there is no conclusive evidence of infection. Horses and donkeys appear to be the only natural reservoir for *T. equiperdum*. Male donkeys can be asymptomatic carriers.

Geographic distribution

Dourine was once widespread, but has been eradicated from a number of countries. Currently, the disease is endemic in most of Asia, northern and southern Africa, South America, and southeastern Europe.

Transmission

Unlike other trypanosomal infections, dourine is transmitted almost exclusively during breeding. Transmission from stallions to mares is more common, but mares can also transmit the disease to stallions. *T. equiperdum* can be found in the vaginal secretions of infected mares and the seminal fluid, mucous exudate of the penis, and sheath of stallions. Periodically, the parasites disappear from the genital tract and the animal becomes noninfectious for weeks to months. Noninfectious periods are more common late in the disease.

Rarely, infected mares pass the infection to their foals, either before birth or through the milk. These infected foals can spread the organism when they mature. Other means of transmission may also be possible, but there is no evidence that arthropod vectors play any role in transmission.

Incubation period

The incubation period is a few weeks to several years.

Clinical signs

Dourine is characterized mainly by swelling of the genitalia, cutaneous plaques, and nervous signs. The symptoms vary with the virulence of the strain, the nutritional status of the horse, and stress factors. The clinical signs wax and wane, and may be precipitated by stress. Stages of exacerbation, tolerance, and relapse can occur several times before the animal either recovers or dies.

In mares, the first symptom is usually a mucopurulent vaginal discharge. The vulva becomes edematous; this swelling may extend along the perineum to the ventral abdomen and mammary gland. Vulvitis, vaginitis with polyuria, and signs of discomfort may be seen. The genital region, perineum, and udder may become depigmented. Abortion can occur with more virulent strains.

In stallions, the first symptoms are edema of the prepuce and glans penis. Paraphimosis may occur. The swelling may spread to the scrotum, perineum, ventral abdomen and thorax. Vesicles or ulcers may be seen on the genitalia; when they heal, these ulcers can leave permanent white scars (leukodermic patches). Edematous patches called “silver dollar plaques” (up to 5-8 cm diameter and 1 cm thick) may appear on the skin, particularly over the ribs. These cutaneous plaques usually last for 3-7 days and are pathognomonic for the disease. They do not occur with all strains.

Nervous signs can develop soon after the genital edema or weeks to months later. Restlessness and weight shifting from one leg to another is often followed by progressive weakness, incoordination, and eventually paralysis. Other clinical signs may include anemia, conjunctivitis, keratitis, intermittent fever, and emaciation. Dourine also results in a progressive loss of condition, predisposing animals to other diseases.

Post mortem lesions

Anemia, cachexia, and genital edema are often seen post-mortem. The edema, which may be indurated, can extend to the ventral abdomen. Gelatinous exudates can often be seen under the skin. In stallions, the scrotum, sheath, and testicular tunica may be thickened and infiltrated. The testes may be embedded in sclerotic tissue and may not be recognizable. In mares, a gelatinous infiltrate may thicken the vulva, vaginal mucosa, uterus, bladder, and mammary glands.
The lymph nodes (particularly in the abdominal cavity) may be enlarged, soft, and possibly hemorrhagic. The perineural connective tissue can be infiltrated with edematous fluid and the spinal cord may be surrounded by a serous infiltrate. A soft, pulpy, or discolored spinal cord may be noted, particularly in the lumbar or sacral regions.

Morbidity and Mortality

The likelihood of infection with *T. equiperdum* depends on whether the infected host is in an infectious or noninfectious stage. The severity and duration of this disease vary with the virulence of the strain, the nutritional status of the host, and stress factors. The prevalent southern African strain results in a chronic, mild disease that may last for up to 10 years. In South America, Asia, and Europe, dourine tends to be more acute. In South America, the disease often lasts only one to two months.

Estimates of the mortality rate range from 50% to nearly 100%. Apparent recoveries have been questioned by some, in view of the long course of the disease and the waxing and waning symptoms. In endemic areas, drug treatment may be possible; however, treatment may result in inapparent disease carriers. No vaccine is available.

Diagnosis

Clinical

Symptoms suggestive of dourine include genital edema and neurologic signs. “Silver dollar plaques,” if present, are pathognomonic. This disease can be hard to diagnose, as the clinical signs may be difficult to identify. Diagnosis is particularly difficult in the early stages or during latent infections.

Differential Diagnosis

The differential diagnosis includes coital exanthema, surra, anthrax, equine infectious anemia, equine viral arteritis, and purulent endometritis such as contagious equine metritis.

Laboratory Tests

Dourine is usually diagnosed by serology combined with clinical signs. The complement fixation test is the prescribed test for international trade, but uninfected animals (particularly donkeys and mules) often have inconsistent or nonspecific reactions. Indirect fluorescent antibody tests may help to resolve these cases. Other serologic tests include the enzyme linked immunosorbent assay (ELISA), radioimmunoassay, counter immunoelectrophoresis, and agar gel immunodiffusion (AGID). A recently developed test can distinguish equine piroplasmosis, dourine, and glanders by immunoblotting.

Definitive diagnosis is by identification of the parasite; however, the organisms are extremely difficult to find. A small number of trypanosomes may be found in the lymph, edematous fluids of the external genitalia, vaginal mucus, and fluid content of plaques. Organisms may sometimes be found in the urethral or vaginal mucus collected in vaginal or preputial washings or scrapings. On rare occasions, the trypanosomes can be found in thick blood films; however, the parasites are often undetectable in the blood. The success rate can be improved by centrifuging a blood sample and examining the re-centrifuged plasma.

Samples to collect

Before collecting or sending any samples from animals with a suspected foreign animal disease, the proper authorities should be contacted. Samples should only be sent under secure conditions and to authorized laboratories to prevent the spread of the disease.
Serum, whole blood in EDTA, and blood smears should be submitted. If silver dollar plaques are present, the skin over a plaque should be washed, shaved, and dried, and the fluid should be aspirated with a syringe to look for trypanosomes.

Recommended actions if dourine is suspected

Notification of authorities

Dourine must be reported to state or federal authorities immediately upon diagnosis or suspicion of the disease. Federal: Area Veterinarians in Charge (AVICS) http://www.aphis.usda.gov/vs/

area_offices.htm
State vets: http://www.aphis.usda.gov/vs/sregs/official.html

Quarantine and Disinfection
T. equiperdum cannot survive outside a living organism, and dies quickly with its host.

Public health
There is no evidence that *T. equiperdum* can infect humans.

For More Information
World Organization for Animal Health (OIE)
http://www.oie.int

OIE Manual of Standards
http://www.oie.int/eng/normes/mmanual/a_summry.htm

OIE International Animal Health Code
http://www.oie.int/eng/normes/mcode/A_summry.htm

USAHA Foreign Animal Diseases book
http://www.vet.uga.edu/vpp/gray_book/FAD/

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Gilbert, R.O. "Dourine." In *Foreign Animal Diseases.* Richmond, VA: United States Animal Health Association, 1998, pp. 182-188.

"Emergency Situations. Guidelines for the management of a suspected outbreak of foreign disease at federally-inspected slaughter establishments." *Canadian Food Inspection Agency.* 11 Sept. 2001 <http://www.inspection.gc.ca/english/anima/meavia/mmopmmhv/chap9/9.1-3e.shtml>